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ORIGINAL ARTICLES.

OIL CYSTS IN THE PERIPHERY OF THE ORBIT.*

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(*Translated by Dr. Adolf Alt.*)

IT is not very long since the cysts which take their origin from the periphery or the interior of the orbit were confounded with similar growths found in other parts of the tegments, the scalp especially, and generally designated as atheromata.

This confusion was due to the similarity of the contents of the sac, forming a sort of gruel, resembling more or less the putty of the glazers, to which may be added other products, as hair, epidermic scales, sometimes crystals of cholesterin, more rarely lime or some bone tissue.

Lebert† by the microscopical study of the wall of congenital orbital cysts, has established the fact that they possess all the attributes of true derma, that is, that besides adult connective tissue elements, are found elastic fibres, sometimes non-striated muscular fibres, hair-follicles, sebaceous and even sudoriparous glands. He also named them dermoid cysts, reserving the name atheroma for those the walls of which consist solely of condensed connective tissue

*Archives d'Opthalmologie, December, 1902.

†Mem. de la Soc. de biologie, 1852, V. IV.

lined with epithelium. In these the glandular elements and muscular fibres are wanting. The summit of an atheromatous cyst always adheres to the skin where the follicle, from which it originated, opened on the surface. This is not the case with dermoid cysts which never adhere to the skin which covers them.

Another point of distinction which is no less important is the fact that atheromata appear at an advanced period of life, while the dermoids grow from the beginning of infancy and start to grow rapidly near the age of puberty.

The site of predilection of the dermoids corresponds with the branchial slits. That is why these cysts are found in the periphery of the orbit where the two branchial slits of the face, the internal vertical and the external oblique one, join it. They are rarely found just up or downwards and still more rarely just over the root of the nose. This has been seen in but five or six cases.

Aside from the hair, the number of which varies and which may even be wanting, the contents of the dermoid consist of exfoliated epithelial cells and fat in variable quantity, according to the number of sebaceous glands. An abundant serous fluid is found only in the exceptional cases in which the sudociparous glands predominate.

By the name of oil cysts, which we want to speak of here, we designate a variety in which the sac, which is fluctuating, smooth, tense and often semi-transparent, contains exclusively an oily fluid, either of a brownish color or colorless. In the first cases the contents consist of oleates, margarates and stereates, which are insoluble in water; in the second case of glycero-stereates and palmidates, which are more or less soluble in water. These two varieties of contents congeal at the ordinary temperature so as to look like butter of cocoa previously heated.

Frequently we encounter little grumous masses of a caseous appearance; they consist of exfoliated epithelial cells, mixed, especially when the cyst has grown large, with round embryoplastic cells and giant cells, the origin of which we shall look for later on.

When carefully studying under the microscope the wall of dermoid cysts, and particularly of the oily ones, we are forced

to distinguish between the posterior or deep pole of the cyst and its anterior one under the skin. Little pronounced at first, this difference becomes more apparent as the cyst grows. Macroscopically the first one, which often adheres to the underlying periosteum, remains much thicker and continues to show all the attributes of true skin, as chorion, stratified epithelium, hair-follicles and glandular adnexa. The second one, on the contrary, is stretched more and more, assumes the appearance of a smooth serous membrane, is poorly supplied with sebaceous glands and hair-follicles, and is often in places or altogether denuded of epithelium. When examining more closely the chorion in the denuded places is found to be covered by a stratum granulosum, formed of round embryoplastic cells, as they are produced by an ulcerative process, and of a great many polymorphous multi-nucleated cells, a form of giant cells which, according to Mitwalsky,* are more numerous than in tubercular follicles. These are, however, but wandering cells, which bring about the formation of a cicatrical tissue which has no epithelium.

In specimens made at our laboratory by Vassaux and Broca† we have verified these conditions of the walls. While, however Mitwalsky sees there an ulceration in the pre-existing derma, Vassaux puts forth the hypothesis that the dermoid inclusion might come, not from the incarceration of the sac, but from an epiblastic fragment the secretions of which, as sebaceous matter, hair and exfoliated epithelium, might be encapsulated in the subcutaneous connective tissue. This might explain the histologic difference between the deep and superficial parts of the cyst, the first being purely dermoid, the latter connective tissue without epithelium. Another explanation, according to Vassaux, might be a rupture by distension, by which the contents of the sac escape into the subcutaneous connective tissue, with perhaps a subsequent encapsulation as it happens with the blood in the formation of a false aneurism. Mitwalsky's answer is that a spontaneous rupture of a dermoid, as it was first mentioned by Spencer Watson, has not been demonstrated, and that he can only see a special ulcerative process in the cyst wall, due to the

*Arch. f. Aug., V. XXIII., p. 109.

†Panas, Traité des mal. des yeux, 1894, Vol. II., p. 189.

rapid distension of the cyst near the age of puberty. At any rate, we must here explain the presence of the great number of giant cells.

In the modified part of the cyst the secreting glands atrophy, are diminished in number and may disappear altogether on account of the increasing stretching. The sebaceous glands which lie in the cyst wall itself are the first to be altered, while the sudoriparous glands which are subdermic, resist longer, and their tubular form is changed into that of an utriculus. In the oil cysts the sebaceous glands are very numerous, while the hair-follicles and hair remain rudimentary, and the epithelial coating becomes thinner and even wanting in places. From this result the abundant contents, consisting of pure oil or an uncolored liquid composed of glycerine united with fat, oil and palmidic acids.

All of the oil cysts, known so far, have been situated in the periphery of the orbit, more especially at its nasal side, or at the tail of the eyebrow. Rarely have they been seen down or outwards; one was situated at the temple (Fieuzal).*

The predilection of these cysts for the nasal angle, where they lie subcutaneously, encroaching more or less on the region of the lacrimal sac, prompted Vernueil to consider them as a special class under the name of prelacrimous cysts, not knowing that Cruveilhier† had described an oil cyst situated at the tail of the eyebrow, and that Paget‡ had spoken of the scarcity of preorbital oil cysts.

Since then such observations have been multiplied, and we may cite those of Rava, Burow, Demons of Bordeaux, P. Berger, Fieuzal, Albert of Vienna, Mitwalsky and Chavasse.§

Mitwalsky, who had particular opportunities, found three oil cysts among fourteen orbital dermoids, and Hirschberg no less than three in eleven, an even larger proportion. I myself have had but a small number to treat. Among these is the relatively exceptional case at the tail of the eyebrow, mentioned above.

A malignant degeneration of the circumorbital dermoids is very rare, and has been described only once, as far as I

*Bull. de la clinique opt. des Quinze-Vingt, 1887, p. 196.

†Essai sur l'anat. path. génér., 1816, V. I., p. 303.

‡Lectures on tumors.

§Academie de Med., June 4, 1901.

know, by Wolff.* The patient was a man, 21 years of age, who came to Bergmann's clinic on account of a small tumor situated at the upper orbital margin, having existed since birth, and showing no sign of inflammation. The removal of the tumor showed that it was a cyst with the contents of a dermoid, the walls of which showed an undoubted cancerous degeneration, which had appeared in the last two years, during which the tumor had perceptibly grown.

Case 1.—Recently I have observed a case of oil cyst in a young girl, 18 years of age, small of stature, of good constitution, without noteworthy personal nor inherited antecedents. Only, her molar teeth are decayed, while the incisors are rough, yellowish and have transverse depressions as there are seen in rhachitic and dyscrasic individuals. There is no other sign of rhachitis on the tibia or other bony parts. When she was one year old a small subcutaneous tumor of the size of a pea was noticed by the mother on the left side near the tail of the eyebrow and attributed to a trauma received a little while previously.

Things remained unaltered till the age of 10 years, when a gradual increase took place to the present volume, that of a pigeon egg, the base of which lies at the head of the eyebrow and the apex in the neighborhood of the ligamentum palpebrale internum.

The skin above it is perfectly normal, shows no cicatrix and is not adherent to the tumor. The consistency of the tumor is uniform and fluctuation easily felt. Under oblique illumination a semi-transparency is noticed. There is no pain, and there never were any inflammatory signs at any time.

On account of these symptoms, together with the congenital appearance, which we may take for certain, I did not hesitate an instant to make the diagnosis of a dermoid prelacrimal oil cyst.

The removal three days later confirmed the diagnosis. It is unnecessary to add that the wound was healed by first intention on the fifth day, when the stitches were removed. When I saw the patient two weeks later she complained of some shooting pains on the side of the root of the nose, re-

*Deutsche Zeitschr. f. Chir., 1901, V. LVIII.

sulting from wounds to terminal filaments of the external nasal nerve. This was proven by an anæsthetic spot on the skin, which reached up to the glabella. Doubtless these pains and the anæsthesia will disappear, thanks to the regeneration of the nerve fibres.

The histological examination of the sac gave the following results:

As always, when a cyst is growing, there is a difference in the constitution of the wall of the superficial and posterior half. The former was made up, instead of derma, of a dense connective tissue stroma without chorion and devoid of an epithelial covering; the other, adherent to the periosteum, was, on the contrary, completely dermic and lined with normal stratified epithelium. Here there were numerous hair-follicles with rudimentary hair, supplied at their base with voluminous sebaceous glands, which on account of their abundance formed a continuous stratum, from which doubtlessly came the fluid oily contents, reminding one, on account of their transparency and lack of color, of glycerine, but differing from it by becoming congealed in the outer temperature of the room. We found no sudoriparous glands, which proves that they must have been scarce in this specimen.

It is interesting to compare these findings with the three cases of oil cysts examined anatomically by Mitwalsky (*loc. cit.*) and described as 9, 12 and 13.

The first case, in a man 24 years of age, was a cyst as large as a pigeon egg, situated over the temporal commissure of the right eye, adhering to the frontal bone, and containing an uncolored liquid, composed of glycero-oleate and glycero-palmidate. The wall of the cyst purely dermic posteriorly where it adhered to the periosteum of the frontal bone, was, on the contrary, thin, ulcerated and without epithelial covering in front.

The second case, in a woman 30 years of age, was a dermoid, the size of a hazelnut, at the outer angle of the left eye. It was very transparent, which showed the thinness of its superficial wall, which measured only two mm., and was smooth like a serous membrane, while the deep wall was perfectly dermic, and two mm. in thickness by one centimeter

in extent. There were but a few fine white hair and sebaceous glands in front, while farther back there were some hair, hard like cilia, and very numerous and large sebaceous glands, but no sudoriparous ones. The part of the cyst which looked like a serous membrane had no epithelial covering.

The third case, in a woman 37 years of age, was a cyst, the size of a pigeon egg, situated at the upper inner left orbital margin, reaching partly into the upper lid, partly into the orbit. On account of its deep seat no transparency could be noticed. It was removed in two operations. The oily contents without color, with sparse white grumous masses, consisted of glycero-oleates and palmidates. The structure of the wall was identical with that of the two preceding cases. At the bottom of it there was an island, one centimeter in diameter, of pure skin. The remainder of the walls, from two to four mm. thick, consisted of fibrillar connective tissue with a thin granulosa completely devoid of epithelium. There were atrophied hair-follicles, mostly sterile, but at the level of the island of skin surrounded by large sebaceous glands. Here and there smooth muscular fibres and a few terminal nerve fibres were found.

(Here follows a similar case, reported by Steindorff* from Hirschberg's clinic, without microscopical examination.)

We may note that Hirschberg found three oil cysts among eleven peribulbar dermoids, or 27.3 per cent., which is nearly the same as Mitwalsky's. But 25 cases are not enough to consider these numbers as definite. With Paget, we think the percentage somewhat too high.

The diagnosis of an oil cyst should offer no difficulty to any one with the necessary clinical experience. Their perfect fluctuation and their usually prelacrimal situation show the way, especially if they are congenital or have appeared at an early age. One might think of an encephalocele only concerning those cysts which lie more or less near the glabella. The fact, however, that they cannot be compressed between the fingers and that we cannot feel an osseous rim where they adhere to the periosteum or bone, is sufficient to establish their identity. When in doubt it will be well to make an explorative puncture, especially when the efforts and the

*Centralbl. f. pr., August, 1900, p. 140.

screams of the child stretch the cyst like a veritable encephalocele, or when we wish to differentiate between an oil cyst and those much rarer ones with serous contents. I do not mention here the very rare pseudo-fluctuating lipomata, which can be distinguished, when taken between index and thumb, on account of their lobulation.

The prognosis is, of course, absolutely good. We are usually called upon to operate on account of the disfigurement or in order to calm the apprehension of the patient and his friends, who are frightened when they notice the rapid increase in size near the age of puberty. We know of no case in which the cyst penetrated into the lacrimal sac, and when we find such a perforation we must at once think of an operative fault. What is the most troublesome with dermoids, as well as with other cysts, is to dissect them from the periosteum, where they adhere more or less firmly. This is the reason that it happens so often that the sac is opened and lets some of its oily contents escape during the operation; this accident is, however, unimportant, and in such a case, having dissected the larger part of the wall, the remainder is best removed with a sharp spoon. This is much better than to leave it behind and to be satisfied with a slow cure by spontaneous exfoliation. This latter method requires the employment of a drain or antiseptic gauze to the detriment of an immediate reunion, and gives rise to the risk of leaving for a long time a fistulous opening which is fraught with inconvenience and danger. Here, as elsewhere, a late microbic infection may take place, especially with the streptococcus, and give rise to erysipelatous attacks, as has been observed in cases of frontal and maxillary sinusitis, treated by so-called conservative methods.

PAMPHLETS RECEIVED.

"Pneumatic Massage in Aural Practice," by E. Pynchon, M.D.

"The Cardiac and Vascular Effects of Operations on the Middle Ear," by H. O. Reik, M.D.

"A Case of Cerebellar Abscess After Infection Through the Labyrinth; Death from Meningitis," by A. Knapp, M.D.

CONTRIBUTION TO THE ETIOLOGY OF MYOPIA.*

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THE etiology of myopia is a subject that has greatly puzzled oculists, and many theories have been suggested as to its cause. All, however, agree that overstraining of the eye by close work during adolescence plays a decisive part in its causation, but there is not the same unity of opinion as to which factor of the visual act produces myopia. In the conception of an object the eye performs principally three actions—accommodation, convergence, and seeing in a limited sense, that is to say, the perception in the retina and the connected processes at the posterior pole of the eye.

In attempting to explain the origin of myopia the attention has mainly been fixed upon the two first-mentioned—accommodation and convergence, but much importance has not been ascribed to the third—the perception in the retina. The opinion that accommodation plays any important part in the origin of myopia seems now to have been given up by most authors. On the other hand, the theory of convergence has gained many adherents. Meanwhile, cases of myopia are often met with in practice which cannot be explained by this theory. That which especially has aroused my doubts on this point is the different effects which corneal opacities and astigmatism appear to exert on the development of myopia whether they occur only in one eye or in both. That opacities of the cornea appearing in childhood favor the development of myopia is a well-known fact. So it seems also to be with astigmatism, the predisposing importance of which for the development of myopia has been made probable by the investigations of Javal and Nordenson.

Opacities of the cornea and astigmatism lead to myopia probably because they reduce the vision and so render close work more difficult. But if corneal spots and astigmatism occur in one eye only, it is, according to my experience, the other sound eye which is in the first place affected with myopia, and when astigmatism in different degrees affects both eyes, myopia is developed particularly or exclusively on

*British Medical Journal.

the least astigmatical eye. As instances of this I will give some cases which have occurred in my practice:

Case 1.—A girl of 20 consulted me on February 20, 1890. In childhood she had suffered from strumous keratitis on the right eye and became shortsighted while at school. On the right eye was a central corneal spot. Emmetropia V=0.1. The left cornea was clear, the eye myopic, 7.50 D. V=1.0.

Case 2.—A colonel, aged 64, consulted me on November 23, 1894. His right eye had been weak-sighted as far back as he could remember; his left eye became shortsighted while at school. My examination gave the following result: R. E., astigmatism+3 D.70°. V=0.4. L. E., myopia, 6 D. combined with astigmatism—1 D. against the rule. V=0.09.

Case 3.—An architect, aged 40, consulted me on October 27, 1896. The sight of the right eye has always been weak, the left eye since schooldays. The right eye, astigmatism+ 1.25 D.; V=0.3. The left eye, myopia—3 D.; V=1.0.

It seems very strange that corneal spots and astigmatism, when occurring in both eyes, act as predisposing causes to myopia, but when they appear on the one eye only they protect against this anomaly. There must, however, be some common cause for conditions so contradictory at first sight. The explanation, in my opinion, is that when astigmatism or corneal spots occur on both eyes, work is rendered difficult to them both, thus both become myopic, but when corneal spots or astigmatism affect only one eye, the normal eye works principally or exclusively, and thus becomes myopic, while the weak-sighted eye, which does not partake in the work, or at least not in the same degree, is thus protected from this change.

This seems to me very probable when I consider other cases which I have had under my care. Such a case is the following:

Case 4.—A. T., schoolboy, 12 years old, consulted me the first time on January 27, 1892. When a little child he suffered from a considerable strabismus convergens of the right eye. The squinting had gradually decreased, but a slight convergence still remained. My examination gave as result: R. E., hyperopia of 5 D., finger in 3 to 4 metres; L. E. myopia, 1 D.; sight normal.

This patient I had the opportunity of examining several times during his schooldays. In the left eye the myopia increased up to 5 D. when the patient was 16 years old, but the right eye remained hypermetropic in about the same degree as before.

That the convergence has no decisive influence on the development of myopia is also proved, partly by the fact that persons who, when children, have lost the one eye, still may become shortsighted on the other, partly by the fact that sometimes by divergent strabismus myopia is developed on the fixing eye. As instances I herewith give some more cases:

Case 5.—A girl of 8 years was wounded in the right eye with a knife. A few days later, on June 1, 1888, when she visited me, there was a perforating wound in the cornea, hypopyon, cataract and total amaurosis. The eye was removed. The wound healed quickly, and the patient returned to her home in the country. The other eye, which seemed to be normal, was not submitted to any careful examination as to its refraction. Seven years later the patient, then 15 years old, consulted me again, as she had become shortsighted. The examination showed myopia 1.5 D. combined with astigmatism 3.5 D., V=0.7. I prescribed for work glasses correcting the astigmatism. Two years later the patient consulted me again, as she had been offered a place in an office, and was not sure whether she dared take it, having only one eye to work with. The myopia not having further increased during the two previous years, I thought she might take the place, though it was rather a hard one of eight or nine hours' writing work daily. Five months and a half later she consulted me again, the shortsightedness having increased. It was now 3 D. I prescribed atropine, but after six weeks the condition of the eye was unchanged. The patient now left her place, and occupied herself only with household work. Still her myopia continued to increase, so that at the end of another year it was 4 D. After that it remained stationary.

Case 6.—A schoolboy at the age of 17 got an iron splinter in the right eyeball. All attempts to extract the splinter with Hirschberg's magnet failed, so the eye had to be removed. The left eye had normal sight and refraction.

Two years later the patient returned, as he had begun to experience difficulty in seeing distant objects. He was now myopic 1 D. At the end of two years the myopia had increased to 2 D., and a posterior staphyloma was to be seen.

Case 7.—A schoolboy began to be shortsighted at the age of 7. Besides that he was inclined to read with only the right eye, the left eye diverging. Examination proved myopia 1.75 D. in both eyes, and a considerable muscular deficiency. Vision normal.

I ordered for the patient full correction for his myopia. Two years later the myopia was increased to 2.5 D. The left eye was still inclined to turn outwards during reading. At the end of another two years (January 8, 1897) the myopia was on the left eye as before—2.75 D.; but on the right eye it had increased to 4.5 D. On December 5, 1898, the condition was as follows: The left eye as before (—2.75), the right eye —6 D. There was binocular fixation unto 15 cm. At this point the left eye turned outwards. In the right eye a posterior stapyhloma; at the bottom of the left eye nothing abnormal.

Case 8.—A. H., schoolboy, aged 12, consulted me on August 23, 1897. A fortnight previously the right eye had been hurt by a blunt arrow. There was a large iridodialysis, and the vitreous was filled with blood. When this was absorbed the lens was found luxated in the vitreous, and a white mass extended from the disc to the yellow spot. It was 10 D. hypermetropic, and the patient could see a finger with this eye two to three metres. The left eye had normal refraction and sight. The patient returned after two years, as he had begun to experience difficulty in seeing distant objects. He was now in the left eye myopic, 1 D. The right eye was in the same state as before. On October 5, 1900, the myopia of the left eye was increased to 2.5 D. The right eye had a divergent squint. Still the myopia increased. On January 16, 1902, I noticed left eye myopic, 3.5 D.; the right eye as before, hypermetropic 10 D., with divergent strabismus.

In order to gain a more firm ground for my conclusions I have examined my notes concerning 6,000 patients in my private practice, and from this material collected 100 cases of anisometropia, either with myopia on the one eye only of

at least 2 D., or with myopia on both eyes but with a difference of refraction of 2 D. These 100 cases I have put together into five groups:

1. Myopia of the one eye, emmetropia or hypermetropia of the other, 12 cases.

2. Myopia of the one eye, corneal spots of the other, 4 cases.

3. Myopia of the one eye, convergent strabismus of the other, 1 case.

4. Myopia of both eyes, but of different degrees, 19 cases.

5. Myopia complicated with astigmatism, 64 cases.

Among these 64 cases there was astigmatism of equal degree on both eyes in 15. In the 49 remaining cases the astigmatism was confined principally or exclusively to one eye. Among these the myopia was principally or exclusively confined to the least astigmatic or emmetropic eye in 40, and only in nine cases to the astigmatic eye.

This cannot be explained according to the theory of convergence, or to any other of the common theories. Neither can it be explained by the supposition that the astigmatic eye is less susceptible to myopia, for the experience points rather to the contrary. The most probable cause seems to me to be the different acuteness of vision of both eyes by uncorrected astigmatism. The eye that is least or not at all astigmatic is usually the eye that possesses the best sight, and is therefore that which is most used in close work. The same explanation can be applied to the cases of myopia in the one eye, and corneal spots or strabismus in the other.

Time does not permit me to give an explanation how the anisometropia might be explained in all the other cases. Still I will take the opportunity to refer to one more case, that seems to be of interest, because it speaks strongly against the theory of convergence.

A lady, aged 28, visited me the first time on June 15, 1892. She was astigmatic in both eyes, —2 D., according to the rule. The left eye was myopic, 7 D. V=0.9; right eye, 1.5 D., V=0.7. The patient had always worked without glasses, and generally with the right eye shut. I prescribed for both eyes spherical, — 1.5 D., combined with cylinder —

2 D.0°, and the myopia having further increased on the left eye I advised the patient to work as much as possible with the right eye. As the glasses I had prescribed did not suit the patient, they were exchanged after five months for glasses which merely corrected the astigmatism. Ten years later (March 1, 1902) the patient returned the glasses I had prescribed; she had constantly used them while reading, etc., keeping the left or most shortsighted eye shut. On examination I found myopia unchanged in the left eye, but in the right—less myopic eye—shortsightedness had increased from — 1.5 to — 4 D.

As to the opinion that convergence would lead to myopia by causing a strain on the optic nerves at the posterior pole of the eyeball I have measured the punctum proximum of convergence in all cases of myopia in my private practice during the latter years. The method I have employed is based on the same principle as those used by Priestley Smith, Maddox, Hirschberg, and Gullstrand for other purposes, namely, the different position of the corneal reflex when the eye is fixing a flame or when it is deviating.

The little instrument I have used has the form of a little rectangular wooden hook, with a small hole just at the angle. A lighted wax match is put in the hole, and the instrument is advanced to the patient's fixing eyes, gliding on a metre scale, which leans against his cheek. As soon as the one eye deviated outwards, the corneal reflex seemed to glide inwards. The distance when this takes place can immediately be measured on the metre scale. The result of my investigations has been that, out of 100 cases of myopia, there were 81 who at least converged 5 cm., and among these were cases of myopia up to 18 D.

This speaks in its way against the theory of convergence, for it is very probable that a strain on the optic nerves at the usual distance for reading (or about 30 cm.) would be produced if the eyes are able to converge to 4 to 5 cm.

The direction of the posterior staphyloma also seems to me to speak against the theory of convergence. When the eyes in reading, etc., are turned downwards and inwards, the strain at the posterior poles must make itself felt outwards and upwards. But the direction of the posterior staphyloma is commonly outwards and downwards.

On the ground of these observations, I think I may enunciate the following thesis:

If by any cause the sight of the one eye is weakened in early childhood, myopia is developed exclusively or principally on the other (strong) eye, whether the first-named takes part in fixation or passes on to convergent or divergent strabismus. If one of the eyes is lost a typical myopia may be developed in the remaining eye.

Convergence equally with accommodation is, therefore, not one of the most important factors in the origin of myopia, for the myopia can arise independently of all convergence. The chief cause of myopia is "seeing" in a limited sense; the perception in the yellow spot and the processes connected therewith at the posterior pole of the eye. What these processes may be is not easily decided. But it seems to me not impossible that the effort of discerning the objects quickly following on each other—as, for instance, the letters in writing or reading—might lead to the hyperæmia at the bottom of the eye, which some theories assume as a predisposing cause of the myopic changes at the posterior pole of the eye.

Accumulated products of fatigue may also have a deleterious influence on the membranes. Hyperæmia on its side may lead to softening of the tissues which yield to the intraocular pressure. In more advanced cases the hyperæmia and the products of fatigue may lead to more serious changes of an inflammatory or atrophic character.

If the opinions here expressed are right they have undoubtedly practical importance. The school myopia is to be prevented only by facilitating the work of the retina. All measures which have another aim are more or less unimportant.

I will, however, by no means deny all importance of convergence. On the contrary, I am always very careful in my practice to facilitate the convergence by means of corrective glasses for myopic patients, specially in cases of muscular insufficiency. But I think that glasses are useful not by lessening the pressure of the muscles on the eyeball or on any of the vortex veins, or by lessening the strain on the optic nerves at the posterior pole of the eye, but chiefly by facilitating binocular fixation and thus contributing to a clear

image of the fixed object in the central fovea. Moreover, correcting glasses improve the position of the body during work at school, and extend the distance for accommodation. Thus I generally give myopic patients fully correcting glasses if accommodation and acuteness of vision are good. Still I cannot find that an artificial emmetropia, effected by correcting glasses for the same eyes which the natural emmetropia has not been able to prevent from becoming shortsighted, should entail the strong protection against progressive myopia which from many quarters has been contended.

DISCUSSION.

Mr. Maddox called attention to the difficulty of applying the laws of probability to this subject without the possession of statistics from uncivilized countries as well as from the civilized. The fact that Mr. Wray found it necessary to exclude blood relations in collecting statistics was a concession to the hereditary tendency in families. His tables showed very clearly and beautifully that while hypermetropia obeyed the laws of probability, myopia did not. This proved the presence of some disturbing influence, and confirmed the impression that bad educational methods played a large part in deepening myopia when once it had begun. It also lent weight to a suggestion which he had made that in the interests of the nation (for undoubtedly a shortsighted nation was inferior to a more nearly emmetropic one) the children of shortsighted parents should be tested under atropine, so as to discover which of them inherited a tendency to short sight, as evidenced by the possession of less juvenile hypermetropia than they should have, with a view to prevent the onset of the defect by modifying educational strain.

Colonel E. F. Drake-Brockman said that in 1869 he was appointed to the Ophthalmic Hospital in Madras. At that time myopia among the natives who applied to the hospital was exceedingly small, and at the same time education was also of an inferior standard. As time went on education became better and standards higher, and in proportion the number of myopes applying at the hospital increased. He concluded that civilization in the direction of advanced edution was one of the chief causes in the increase of myopia among the natives of India.

Dr. Hill Griffith doubted if hypermetropia ever became less as years went on, and certainly he had never seen myopia supervene on hypermetropia. One writer warned them from fully correcting hypermetropia in case the development of the eye was hindered. One would have expected myopia to be very common in India, where for centuries education was in advance of that in Europe.

Mr. Doyne was astonished to hear what Dr. Hill Griffith said. He had seen dozens of cases in which hypermetropia had diminished. He also thought that if full correction were not ordered there was often a tendency to the diminution of hypermetropia.

Mr. Story (Dublin) doubted if myopia had really so much increased in modern times as was generally believed. In former times people did not seek aid for defective sight so assiduously as they did now.

Dr. McGillivray had seen a few cases of slight hypermetropia pass into slight myopia. In one case he had seen a change of 4 D.

Dr. Hern said that his experience was that hypermetropia of low degree did not tend to alter, but in high degrees it did get less as time went on. He did not remember a single case in which hypermetropia became myopia when his first observations were made with the eyes under the influence of atropine.

Mr. Holmes Spicer had met with cases occasionally in which hypermetropic eyes had become less hypermetropic and with some which had passed from the hypermetropic to the myopic side, but the change in refraction had never been very great. With regard to Professor Widmark's paper, they were greatly indebted to him for his views on myopia, as they gave them a new point of view and a new direction to work in. He did not accept his views because he was firmly convinced of the truth of the convergence theory of myopia and of its value as directing treatment. As to Professor Widmark's statement as to the development of myopia in the good eye where the other cornea was nebulous, it was not so in his experience, and he had not met generally with the development of myopia in an eye in which its fellow had been excised in infancy.

MEDICAL SOCIETIES.

PROCEEDINGS OF THE OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.*

W. Lang, F.R.C.S., Senior Vice-President, in the Chair.

Clinical Evening.

Thursday, December 11, 1902.

Death of the President.

Before commencing the business of the evening, Mr. Lang said: "It is my mournful duty to announce to you the great loss this Society has sustained through the death of its President, Dr. David Little, at the age of 62. It will be the wish of all of us to convey to Mrs. Little and her family our deep and heartfelt sympathy in the irreparable loss she has sustained—a loss which we as a Society feel most keenly. It was only a year ago that he, apparently in his usual health, delivered that admirable presidential address which appears in the recent volume of our *Transactions*. It is an address characteristic of the man who was modest, calm, shrewd, decided, and eminently practical. In it he says: 'To be awarded by my professional colleagues the highest office in their gift is indeed a distinction of which any one may be proud,' The remainder of the address showed that Dr. Little was a good observer, who could carry theory into practice in a most successful manner, as evidenced by the good results of his operations. His reputation as a successful ophthalmic surgeon in the North of England was deservedly great, and as an operator he was second to none. His kind, quiet and gentle manner endeared him to his patients, and to all he was a loyal and true friend. We mourn with Mrs. Little and her family, and I am sure it is your wish that a vote of condolence and sympathy should be sent to her from us."

Cases.

The following were shown:

By Mr. Stephen Mayou: A case of contracted pupils undilatable to a mydriatic. The patient, a child, showed ob-

*British Medical Journal.

vious signs of congenital syphilis, and the knee-jerks were absent.

Mr. Sydney Stephenson said that although the pupils did not react to light, yet they did to accommodation, and this, taken in conjunction with the other symptoms, induced him to believe that the case was one of commencing tabes.

Dr. F. W. Edridge-Green gave demonstrations of (*a*) classification test for color blindness, and (*b*) lantern test for color blindness. The former consisted of colored wools, silk, cards, and glass, whereby it was impossible that a color-blind person could by contrast tell correctly the colors. The lantern consisted of an ordinary tin box like an optical lantern, in which, instead of the lens, was substituted various colored glasses which could be used alone or in combination so as to test the color vision in the same way that an engine driver on a railway or a "look-out" in a ship would have to see and interpret the colors.

Mr. Adams Frost thought that a committee should be formed with a view of testing and reporting on patients with defective color vision when using Dr. Edridge-Green's tests.

Mr. Breuer thought that Dr. Edridge-Green's tests were inefficient, and that no one test was convincing.

Mr. Charles Blair and Dr. Bernard Potter showed two cases of aniridia and one of coloboma of the iris in the same family.

Mr. Blair also showed some zonular or ribbon-shaped opacity of the cornea.

Mr. E. E. Maddox showed (*a*) an eye heater; (*b*) a new regulating transformer; and (*c*) a lamp resistance. The eye heater consisted of a coil of thin tinned wire sewn into flannel, which could be placed in an eye dressing, and by means of the regulating transformer could be put into contact with the current from the electric main. In this way the heat could be regulated to a nicety, and if a fuse wire were placed in the circuit there was no possibility of overheating, and the temperature could be kept for any length of time constant.

Mr. Sydney Stephenson exhibited several patients whose cornea had become stained by the long-continued application of sulphate of copper to the lids for the cure of trachoma. The opacity covered the central part of the cornea, and was

accentuated towards the upper and lower margin, so as to form two crescents of a rusty greenish color. Pieces removed from the affected cornea by scraping gave some of the characteristic chemical reactions of copper.

Mr. Lang thought that possibly a corneal microscope might show the crystalline deposit. He had seen a fluorescent appearance of the cornea after the use of quinine lotion.

Mr. Stephenson, however, thought the deposit was not of a crystalline nature.

Mr. N. C. Ridley showed a child with congenital anophthalmos and a case of embolism of the central artery of the retina in a young girl, which followed a fright.

Mr. E. Treacher Collins a case of atrophy of the optic nerves caused by lightning, as it also caused deafness he thought it due to an electrolytic action.

Mr. Arnold Lawson showed a case of bitemporal hemiopia from acromegaly. Since taking pituitary gland the left field and vision had much improved, but during the same period the right, which was originally the better eye, had undergone further degeneration of sight and field.

Mr. Doyne had seen two cases in which pituitary gland had done no good to the vision in cases of acromegaly.

Mr. Lawson's second case was an unusual form of retino-choroidal change, the result of hæmorrhage.

Mr. Lang mentioned a case he had once seen similar to Mr. Lawson's, in which the same sort of appearance was really due to a spreading sarcoma.

Mr. Jessop thought the appearance was rather suggestive of tubercle.

Mr. W. H. H. Jessop: A case of optic neuritis with peculiar retinal changes, probably physiological in nature.

Dr. F. E. Batten: A case of cerebral degeneration with changes at the macula. The child was seven years of age and was becoming an idiot.

Dr. Rayner Batten showed drawings of similar cases.

A DISCUSSION ON THE RARER FORMS OF OPTIC ATROPHY.*

READ AT THE MEETING OF THE BRITISH MEDICAL ASSOCIATION, SECTION OF OPHTHALMOLOGY.

DR. JAMES TAYLOR would exclude from the discussion, except for purposes of comparison, atrophy following neuritis, the atrophy following neuritis the result of intracranial growth, and atrophy (primary) resulting from tabes or general paralysis. At the same time, in emphasizing the importance of recognizing the frequent occurrence of optic atrophy in general paralysis, a fact made clear by Dr. Mott's experience at Claybury, he had made necropsies on several cases of general paralysis in whom the mental symptoms had been present but a short time, although they had been blind in some instances for a considerable number of years. It was also to be recognized that optic atrophy was not an uncommon result of the neuro-retinitis occurring in Bright's disease, and also in glaucoma and of injuries to the optic nerves. He referred first to the large class of cases of optic atrophy associated with disseminated sclerosis. These he believed were in most cases the result of a neuritis, usually retrobulbar in position, but in some cases obvious on account of redness and slight swelling of the disc. In some a central scotoma for color was present; the pallor in these was slightly different from those in tabetic cases, and the vessels were not so small. One very striking difference also was that in the vast majority of cases of atrophy in tabes the visual impairment went slowly but surely on to cause complete blindness. He had never seen complete blindness occur in any of the numerous cases of disseminated sclerosis which he had observed; in fact, one was often much surprised at the very fair vision which coexisted with extreme pallor of the discs. Dr. Taylor next referred to cases of toxic amblyopia and the atrophy which frequently accompanied it. He mentioned the small amount of tobacco which might cause amblyopia if sugar were present in the urine, and to one patient who had glycosuria and central scotoma who had not smoked or used tobacco for twenty years. He asked what it was which in some cases of amblyopia prevented recovery,

*British Medical Journal.

and was the atrophy in these more likely to be a progressive one? He next referred to cases of atrophy not preceded by neuritis occurring as by pressure on the chiasma, and referred to the frequency in which such cases came under observation with one eye already blind while the other had the temporal field blind. Dr. Taylor also referred to a case of optic atrophy which he had seen in a case of ordinary left hemiplegia in which there was no hemianopsia, and to two cases of optic atrophy in young men, the reasons for which were obscure.

Mr. Holmes Spicer said that in the atrophy accompanying disseminated sclerosis he had found that the loss of sight was central—a central scotoma—so that although there was not much reduction of the size of the fields, yet there was great impairment of sight. He had always regarded these cases as being caused by an island of sclerosis somewhere in the optic nerve behind the eye. He believed that these cases did not, as a rule, progress to a complete loss of visual fields. As to the question of tobacco amblyopia, the possible fallacy always lay in the tendency of smokers to conceal the fact of their continued habit, and to tell untruths about it. There was no doubt that central amblyopia did occur in diabetes, but the cases on record in which there was no possibility of tobacco were few, and, in fact, diabetics were more liable to be affected with tobacco amblyopia than were healthy subjects. He had published a case of primary optic atrophy in a boy affected with diabetes insipidus in which there was no question as to the use of tobacco, and the loss of vision was not of the central scotoma type but a primary atrophy resembling that of tabes. Many of the isolated cases without obvious cause, of which Dr. Taylor had spoken, probably belonged to the hereditary group. Cases of Leber's disease sometimes appeared isolated because they were unacquainted with the whole family history.

Dr. Emyrs-Jones asked Dr. Taylor if he had come across any cases associated with dropping of fluid from the nose. He had reported such a case fifteen years ago in the *Ophthalmic Review;* both optic nerves were quite atrophic. The patient had since died, but no necropsy was allowed. He had not seen another case. He quite agreed with Mr. Spicer as to the difficulty of getting smokers to tell the truth concerning

the use of tobacco, which was a very important factor in the production of atrophy.

Dr. Hawthorne regarded it as of the first importance to recollect that clinically optic nerve atrophy was not a fact but an inference. The diagnosis might in certain circumstances be a very confident one, but after all it was a diagnosis and not the statement of an observed fact. The evidence on which it rested was obtained from three different sources, namely, the state of visual acuity, the characters of the optic disc, and the condition of the visual fields. Possibly in the majority of cases, certainly in a large proportion, these three sources of evidence were equal contributors. The visual acuity was reduced, the disc was extremely white, and the visual field was contracted. But this was not invariably the case. In the first place the disc might be quite justifiably described as "white," and yet the vision and visual fields be normal, and in these circumstances he, for his part, regarded a diagnosis of optic atrophy as altogether in advance of the facts. Again, the test of types might show a full measure of vision, and yet the state of the field and the condition of the disc be such as to place the diagnosis beyond dispute. Opposed to this were cases with a white disc, great reduction of the visual acuity, and yet a full peripheral field, at least for white. With this there might or might not be a central scotoma, but complete loss of the power to appreciate color in any part of the field was common. Further, it was possible to have a disc presenting no abnormal features to ophthalmoscopic examination, to find a normal standard of vision, and yet with these to detect a considerable loss in the visual field. Such a combination Dr. Hawthorne had observed in a patient having Argyll-Robertson pupils, loss of the knee-jerks, and a zone of anæsthesia round the trunk, and in these circumstances a diagnosis of optic atrophy with tabes dorsalis seemed unavoidable. There were other considerations that might be discussed, but what he wished to urge was that every case of optic atrophy should be studied as bearing on the visual acuity and visual fields (both for white and colors) as well as in relation to the ophthalmoscopic appearances of the disc. Possibly in this way a collection of facts might be obtained which would throw some light on a

region in which at present there was much uncertainty. What was wanted was not merely the statement of optic atrophy as a fact but the presentation of the evidence on which this conclusion was grounded. In this way different forms of atrophy might be classified if not explained. So far as the specific instances quoted by Dr. Taylor went, he agreed generally with the distinctions drawn between the atrophy that accompanies tabes dorsalis and that sometimes found in disseminated sclerosis. He was strongly disposed to believe that an amblyopia having the features usually credited to tobacco poisoning also occurred apart from tobacco. He had seen a central scotoma in diabetes mellitus quite apart from anything like over-use of tobacco, and he thought that a similar condition had been recorded where no question of tobacco could arise, namely, in young patients with diabetes insipidus, instances of which had been described by Mr. Holmes Spicer and Mr. Work Dodd. When all had been said there remained cases of optic atrophy which seemed beyond explanation, but this rendered the claim for a systematic study of the condition all the more urgent. That study, if it were to be fruitful, must be based on something more than opinions regarding the appearance of the optic disc.

Dr. Bronner quite agreed with Dr. Taylor that in many cases diagnosed as tobacco amblyopia the impaired vision was due to other causes. Many were due to commencing central retinal and choroidal changes, which disappeared on the use of potassium iodide. It was important in all cases of optic atrophy to take the field of vision for color as well as for white. In many cases of so-called tobacco amblyopia the field of vision was not contracted for white, but only for colors.

Dr. Newton Pitt said that the pathological condition found was not well known, for few if any cases had been examined histologically in which the fields had been accurately taken during life.

Dr. Lodge thought that the case mentioned by Dr. Hawthorne, in which there was normal vision with limitation of the field and a zone of anæsthesia round the trunk was one of syringomyelia, in which vasomotor disturbances were the cause of the eye symptoms. Atrophy from tobacco rarely

came on before 40, but there were numerous cases in which tobacco might be fairly excluded occurring in people from 16 to 30 in which the origin was most doubtful. He mentioned several cases in which this occurred.

Mr. Parsons called attention to the tendency to put the lesion in all these cases in the optic nerve itself. In many of them it was probably in the retina, and the evidence in favor of this in tobacco amblyopia was increasing rapidly. Attention was especially directed to the work of Birch-Hirschfeld on the subject.

Mr. Bishop Harman said he had for some time been unable to accept the current views of the pathology of optic atrophy in retrobulbar neuritis, etc.; he believed it to be based upon an inaccurate appreciation of the ascertained facts of the development of the nervous connections of the eye, and of the theory of the neuron. The retina was known to arise as an outgrowth from the brain; within this outgrowth nerve cells gave rise to axons which grew centrally to make connections with parts of the brain different from the site of origin of the evagination. Thus the trophic centres of the optic nerve fibres were the ganglion cells of the retina from which they were outgrowths. The case was parallel with the relation of a posterior root ganglion cell to its central axon passing into the cord. Thus degeneration of the optic fibres should be in the vast majority of cases ascending only, and we should look in cases of optic atrophy first to the retina for evidence of damage. He believed a rational classification could be arrived at as follows: (1) Primary damage in disease of the ganglion cells (*a*) from anæmia due to spasm of retinal vessels from drugs as quinine, reflexly from cold, and to general anæmia succeeding severe hæmorrhages, febrile diseases, etc.; (*b*) from poisoning of the ganglion cells by drugs—tobacco, lead—a view directly supported in the antidote of tobacco blindness, strychnine, which was agreed to act directly upon nerve cells. In all these cases the changes at the disc would be proportionate to the number of cells damaged; in cases of great loss of ganglion cells, it was probable the rapid destruction and swelling of the myelin sheaths of the degenerating fibres at the lamina cribrosa produced a mechanical choked disc. (2) Cases of damage to

the optic nerve by contiguity of diseased structures or in general nerve changes producing islands of fibroid exaggeration, and followed by obvious atrophy of the disc. Here ascending degeneration should be the earlier result, with a later degeneration of the axon segment next the trophic ganglion cell from disuse, a process the more easy owing to the special myelin sheathing of the optic nerve fibres. In reply to a question by Dr. McGillivray (Dundee) as to how he could explain by ascending degeneration undoubted optic atrophy following section of the nerve in fracture at the optic foramen, Mr. Harman said in these cases there was nothing to show the damage was limited to the actual point of injury, exudation was just as certainly to be found within and around the optic sheath even to the disc, which would explain the early onset of atrophy in some cases; further, he allowed the possibility of a degeneration of the segment between injury and trophic cell, both from disuse and by reason of the arrangement of the myelin sheaths of the optic fibres.

Dr. Hill Griffith found difficulty in explaining those cases in which atrophy followed copious hæmorrhage. The largest class of all was that in which no satisfactory cause could be assigned. Women were much more susceptible to the influence of tobacco than men; they developed tobacco amblyopia sooner and with less tobacco.

PAMPHLETS RECEIVED.

"Tinnitus Aurium," by G. G. Lewis, M.D.

"Chancre of the Tonsils," by W. Cheatham, M.D.

"Visual Tests for Children," by A. E. Ewing, M.D.

"A Series of Mastoid Operations," by G. F. Fiske, M.D.

"Enormous Naso-Pharyngeal Soft Fibroma," by C. R. Holmes, M.D.

"Post-operative Management of Intra-Nasal Surgery," by M. A. Goldstein, M.D.

"Exercises in the Surgical Anatomy of the Temporal Bone," by S. Spencer, M.D.

"Juvenile Cataract with Especial Reference to the Lamellar Form; with Report of Cases," by F. Alter, M.D.

ABSTRACTS FROM MEDICAL LITERATURE.

By W. A. SHOEMAKER, M.D.
ST. LOUIS, MO.

THE POST-OPERATIVE HISTORY OF FIFTY CASES OF SIMPLE CHRONIC GLAUCOMA.

Charles Stedman Bull, in a paper read before the American Ophthalmological Society, July 16, reports the results of ninety-four iridectomies, broad and peripheral, performed on fifty patients, ranging in age from twenty-six to eighty-four years, all suffering from simple, non-inflammatory chronic glaucoma, showing increased tension, narrowing of the visual field, especially on nasal side, and impairment of vision. Iridectomy was done on one eye alone in six cases, on both eyes simultaneously in thirteen cases and on both eyes at varying intervals of time, in thirty-one cases.

The cases were under observation from one to twenty years. As to central vision, a temporary improvement was noted in seven eyes, a permanent improvement in thirty-seven, and immediate failure of central vision in two (eyes with telescopic fields). In twenty-four eyes the vision that existed before operation was retained as follows: In one eye for two years, in seven for three years, in three for four years, in one for five years, in seven for eight years, in two for twelve years, and in two for eighteen years.

The author found that "the best results as to ultimate vision occurred in the cases in which the central vision was the best and the fields were the least encroached upon at the time of operation, or, in other words, as soon as the existence of the disease was definitely established."

And "that where the disease undoubtedly exists in both eyes of a patient better results as to visual acuity and the field of vision are obtained by a simultaneous operation on the two eyes."

SCHOOL HYGIENE OF THE EYE.

J. W. Sherer (*St. Louis Medical Review*, Dec. 6) emphasizes the importance of examining the eyes of every pupil before systematic study is undertaken in order to discover and correct any defect of vision that may exist. The other

important points that should claim our attention are: (1) Light; (2) the position of the body during the hours of study; (3) amount of near work to be done; (4) type used in school books.

Light should come from above and to the left: there should be sufficient illumination to enable an eye with normal acuteness of vision to read diamond type at 14 inches in the darkest part of the room on gloomy days.

The author agrees with Risley, who favors a southern exposure (rather than Norris, who favors a northern), because he believes that every apartment that is regularly occupied should be flooded with sunshine. When artificial light is necessary he prefers the electric incandescent lamp enclosed in a lightly-frosted globe which conceals the film, and produces a diffuse light.

As to desks, the adjustable variety should be used as well as an adjustable seat. Both should be adjusted so that the pupils feet rest comfortably on the floor and the arms on the desk, without elevating the shoulders or leaning forward.

As to the amount of near work to be done, the author makes a plea for as frequent intervals of relaxation as the nature of the study will allow, the younger the pupil the more consideration he should be shown. Home study for younger children is deprecated. The type of school books should be large, well spaced and the lines leaded.

OBSERVATIONS UPON RECENT METHODS OF TREATING CORNEAL ULCERS. WITH ESPECIAL REFERENCE TO THE USE OF CARBOLIC ACID AS A NOT INFREQUENT SUBSTITUTE FOR THE ACTUAL CAUTERY.

Samuel Theobald (*American Journal of the Medical Sciences*, June) believes that in many cases of corneal ulcer where the cautery is usually employed carbolic acid may be substituted with advantage. He does not claim that it will accomplish, in every case, what the cautery will, but recommends that it be given a trial in most cases before resorting to the galvano- or thermic cautery, as it is a much simpler procedure and less dangerous. As to its application, the author says:

In applying pure carbolic acid to the cornea it is, of course, important to limit its action carefully to the affected

part. To facilitate this the eye should be anæsthetized by cocaine, which renders the procedure entirely painless. I have found it convenient to make the application by means of a pointed toothpick, about the tip of which a very small quantity of absorbent cotton has been wound. If much cotton is used an excess of the acid will be taken up, and it will be almost impossible to prevent its spreading over healthy portions of the cornea. To the surface of the ulcer the acid should be thoroughly applied by a gentle rubbing movement, which is, in effect, a sort of curettage. When the ulcer is foul and its walls are lined by infected and necrotic material, this should be removed with a small curette before the acid is applied. When, however, this condition is less pronounced, aided by the loosening action of the cocaine, the cleaning of the ulcer may be affected satisfactorily by means of the toothpick, armed with a wisp of dry cotton. After the acid has been allowed to remain in contact with the ulcer for a few moments, the lids meantime having been held apart, its further action should be arrested by flushing the cornea with sterile water, normal salt solution, or a saturated solution of boric acid.

CAUSES OF PRIMARY GLAUCOMA.

George Levinsohn (*Berliner Klinische Wochenschrift*, October 20) thinks an increase of connective tissue in the ciliary body is, in the vast majority of cases, the cause of primary glaucoma.

The enlarged ciliary body presses upon the iris, pushing it forward, lessening the depth of the anterior chamber, and to a greater or less extent obliterates Fontana's space. The pushing forward of the iris dilates the pupil which assists in obstructing the canal of Schlemm. The author submits specimens in support of his theory.

THE EYES OF SCHOOL CHILDREN IN NEW YORK.

As the result of examining 55,000 children, in thirty-six public schools, last year, the Health Commissioner of the city of New York found 12 per cent. suffering from contagious diseases of the eyes. In order to permit the attendance of such children, ophthalmic surgeons have been appointed to make routine examination of the eyes of all applicants.

THE TREATMENT OF CORNEAL INFILTRATIONS BY IODINE-VASOGEN.

On account of the severe and prolonged pain produced by the tincture of iodine when applied to corneal ulcers, and on account of the difficulty of limiting the effect of carbolic acid, the author concluded to try Lehn and Fink's iodine-vasogen (in 10 per cent. solution) in this class of cases.

Twelve of the nineteen cases referred to were followed from start to finish. All were ulcers, and the results of the treatment was favorable from the start; the first application stopping the progress of the disease, and after several more applications a distinct improvement was noticed; the exudate absorbing and the ulcer healing promptly.

His conclusions are:

1. Iodine-vasogen is a valuable application in infiltrated and spreading ulcers of the cornea, whether associated with purulent conjunctivitis or not.

It is particularly indicated in those cases in which the galvano-cautery is contra-indicated by the situation of the infiltrate.

2. It rarely causes pain, if not applied in excess, and never causes any unpleasant reaction or untoward effects.

3. Preliminary anæsthetization of the cornea with cocaine is rarely required, and in general is better omitted.

4. The application is best made every other day until the infiltrate begins to shrink decidedly, and then should be made every three or four days until the infiltrate disappears.

LOWERED BLOOD-PRESSURE AS THE CAUSE OF GLAUCOMA.

In a recent paper read before the French Ophthalmologic Society, Zimmerman (*Revue générale d' Ophthalmologie*, September 20, 1901) advanced the theory that decrease in blood-pressure, from mental or physical shock, cardiac disease, etc., is a prominent factor in the etiology of glaucoma, and in his explanation he utilizes both the theory of defective excretion and that of excessive secretion. When vascular pressure is lowered, even though intraocular tension is normal, the blood enters the eye only with difficulty, and pulsation of the intraocular arteries is noticed. Diminished intraocular supply causes denutritional changes and edema, with actual increase of intraocular tension. The sclera becomes distended, the

intraocular veins are compressed, general edema of the inner tunics results, and the gross changes typical of glaucoma occur. Zimmerman believes that in certain cases in which intraocular tension does not rise above normal, glaucoma may develop from a relatively low vascular pressure, the result of profound and persistent cardiac disturbance. He also says that prodromal glaucomatous attacks do not necessarily indicate ocular disease. The eye may at first be healthy, but the blood-pressure greatly lowered. True glaucoma does not develop until repeated prodromal phenomena have produced such anatomic changes as cupping of the disc and closure of the filtration angle.

The practical application of these observations is that in simple glaucoma the treatment should include, primarily, measures to increase and maintain the proper blood-pressure. In 40 cases of subacute glaucoma so treated, Zimmerman had need to resort to iridectomy but once. As to the drugs employed, digitalis was found unsuitable on account of certain mydriatic effects. Strophanthus acting upon the heart muscle rather than upon the blood vessels was very satisfactsry, administered in doses of eight minims four times daily. Adonis vernalis was found equally effective.

This treatment, of course, is not indicated in secondary glaucoma following disease, injury, or operation, as here intraocular pressure is the primal cause, and the arterial pressure may not be disturbed.—*American Medicine.*

PAMPHLETS RECEIVED.

"Weight and Diet in Pulmonary Tuberculosis," by J. F. Russell, M.D.

Empyema of the Frontal Sinus; Some Observations on Its Treatment," by G. L. Richards, M.D.

"Jacques Daviel and the Beginning of the Modern Operation of Extraction of Cataract," by A. A. Hubbell, M.D.

"Address on an Exhibit of Early (prior to 1860) British and American Ophthalmic Literature," by C. A. Wood, M.D.

"A Case of Meninigitis from Extension of Acute Purulent Otitis Media Through Osteomeyelitis of the Petrous Bone," by A. Knapp, M.D.

BOOK REVIEWS.

Biographic Clinics. The Origin of Ill-Health of De Quincy, Carlyle, Darwin, Huxley and Browning. By G. M. Gould, M.D. [Philadelphia: P. Blakiston's Son & Co. 1903. Price, $1.00].

The learned author of this very interesting book shows that an error of refraction unrecognized or uncorrected may have a decided influence on the general health, and consequently on the character of the individual. The biographies of the five great minds selected by the author plainly show the ill effects which might have been remedied by means of glasses. This is most interesting reading and should be carefully studied by physicians as well as the general public.

In additional chapters the meaningless term of biliousness is discussed; then astigmatism and eye-strain and kindred subjects. All of this is clearly and simply expounded, and will prove most satisfactory reading to all. Alt.

PAMPHLETS RECEIVED.

"Cancer of the Larynx Cured by X-Rays," by W. Schepegrell, M.D.

"A Peculiar Form of Persistent Pupillary Membrane," by A. Duane, M.D.

"The Treatment of Corneal Infiltration by Iodine-Vasogen," by A. Duane, M.D.

"Some Considerations of the Hygienic and Prophylactic Treatment of Myopia," by A. Duane, M.D.

"Reflections on Some of the Purposes and Work of the New York State Medical Association," by A. A. Hubbell, M.D.

"Simultaneous Paretic Mydriasis, Subluxation of the Lens, and Rupture of the Choroid, with Marked Involvement of the Retina," by A. Duane, M.D.

"Chronic Suppurative Otitis Media. When Should Radical Surgery be Employed in Its Treatment, and of What Should It Consist?" by G. L. Richards, M.D.